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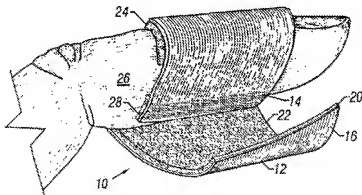
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[Continued on next page]

(54) Title: WOUND COVERING



(57) Abstract: A bandage wrap (10, 40, 300, 300', 400) in the form of a strip composite material defining a longitudinal direction includes a longitudinally continuous band (18, 48, 330, 330') of loop-engageable fastener elements (14, 42, 332, 332') a longitudinally continuous strip of loop material (22, 52, 314, 414) and a longitudinally continuous band of wound dressing (24, 54, 336, 436) spaced from both longitudinal edges of the bandage wrap and extending from a side (20, 50, 328, 428) of the bandage wrap opposite the fastener elements. A reclosable wound covering assembly includes a frame member (102) defining a central aperture (104), the frame having a first and a second broad surface (114, 116), loop-engageable fastener elements (112) extending from the first broad surface about a perimeter of the aperture, and an adhesive (118) disposed on the second broad surface for adhering the frame member to skin (101) and a wound covering (104) including a loop material (122) engageable by the fastener elements and a wound dressing (124) permanently attached to the loop material. The loop material is sized and shaped to cover the aperture (104) and to overlap the perimeter for releasably engaging the loop material with the frame member, the wound dressing being arranged to be received in the aperture when the loop material is engaged by the fastener elements about the perimeter of the aperture. Such an assembly can be adhesive free by including loop engageable fastening straps (130, 132). Methods of making a bandage wrap and a reclosable wound covering assembly are also disclosed.



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WOUND COVERING

BACKGROUND

This invention relates to wound coverings and more particularly to wound coverings that incorporate hook and loop fasteners.

5 Wound coverings are known for covering and protecting a wound during healing of the wound. Wound coverings typically employ adhesive on a large portion of the surface area of the wound covering to adhere the wound covering to the skin, and require removal of the entire wound covering when it is desired to change the wound covering.

SUMMARY

10 According to one aspect of the invention, a bandage wrap in the form of a strip composite material defines a longitudinal direction and includes a longitudinally continuous band of loop-engageable fastener elements extending along a first longitudinal edge of the bandage wrap; a longitudinally continuous strip of loop material extending along a second longitudinal edge of the bandage wrap and having an exposed
15 surface arranged to be engaged by the fastening elements when the bandage wrap is wrapped about an object extending in the longitudinal direction; and a longitudinally continuous band of wound dressing spaced from both longitudinal edges of the bandage wrap and extending from a side of the bandage wrap opposite the fastener elements.

20 Variations of this aspect of the invention can include one or more of the following features. The fastener elements have stems, the stems being integrally molded with a strip form resin base forming the first longitudinal edge of the bandage wrap. The wound dressing is permanently secured to a side of the strip-form resin base opposite the fastener elements. The wound dressing is transversely spaced from the band of fastener elements. The bandage wrap further includes a strip of adhesive extending along the first
25 longitudinal edge on a side of the bandage wrap opposite the fastener elements. The bandage wrap is in the form of a roll of bandage wrap material adapted to be severed

transversely into separate bandage wraps. The loop material is a non-woven web of fibers stretchable in the transverse direction and dimensionally stable in the longitudinal direction. The bandage wrap further includes a second band of loop engageable fastener elements spaced apart from the first longitudinal edge.

5 According to another aspect of the invention a reclosable wound covering assembly includes a frame member defining a central aperture, the frame having a first and a second broad surface, an adhesive disposed on the first broad surface for adhering the frame member to skin, loop-engageable fastener elements extending from the second broad surface about a perimeter of the aperture and a wound covering including a loop
10 material engageable by the fastener elements and a wound dressing permanently attached to the loop material to extend from one side of the wound covering, the loop material being sized and shaped to cover the aperture and to overlap the perimeter for releasably engaging the loop material with the frame member, the wound dressing being arranged to be received in the aperture when the loop material is engaged by the fastener elements
15 about the perimeter of the aperture.

Variations of this aspect of the invention can include one or more of the following features. The loop-engageable fastener elements are integrally molded with the second broad surface of the frame from a common thermoplastic resin. The wound covering further comprises a backing layer to which the loop material and the wound dressing are
20 permanently attached. The loop material forms a backing to which the wound dressing is permanently attached. The reclosable wound covering assembly further includes a release liner covering the adhesive for removal prior to applying the frame member about a wound. The wound dressing includes a pre-applied medicament for contacting and treating a wound.

25 According to another aspect of the invention, an adhesive free bandage wrap includes a four-sided hook frame including hook and loop engageable fastening straps, and a wound covering including hook-engageable material for engaging with the hook frame and wound dressing material for covering a wound.

According to another aspect of the invention, a method of making a bandage includes die cutting a first material including hooks to form windows in the first material, die cutting wound dressing material to form discrete wound dressing elements, tacking the discrete wound dressing elements to a hook-engageable material to form a wound covering, and die cutting and releasably engaging the first material and the wound covering to form the bandage.

A variation on this aspect of the invention can include laminating an adhesive and a release layer to the first material.

According to another aspect of the invention a bandage is made by the above method.

Advantages of the invention may include easy removal of at least a portion of a wound covering to allow viewing of a wound, and easy removal and replacement of a wound covering.

The details of one or more embodiments of the invention are set forth in the accompanying drawings and the description below. Other features, objects, and advantages of the invention will be apparent from the description and drawings, and from the claims.

DESCRIPTION OF DRAWINGS

Fig. 1 is a diagrammatic illustration of a bandage wrap shown wrapped around a finger;

Fig. 2 is an unscaled, diagrammatic side view of the bandage wrap of Fig. 1;

Fig. 3 is an unscaled, diagrammatic side view of an alternative embodiment of a bandage wrap;

Fig. 4 is a schematic illustration of a method for manufacturing a bandage wrap of the invention;

Fig. 5 is an unscaled, diagrammatic view of the bandage wrap manufactured by the method illustrated in Fig. 4 taken from the direction of arrows 5-5 of that Fig.;

Fig. 6 is an unscaled, diagrammatic view of the bandage wrap manufactured by the method illustrated in Fig. 4 taken from the direction of arrows 6-6 of that Fig.;

Fig. 7 is an unscaled, diagrammatic section view of the bandage wrap manufactured by the method illustrated in Fig. 4 taken along line 7-7 of that Fig.;

Fig. 8 is a view of the bandage wrap of Fig. 7 taken from the direction of arrows 8-8 of that Fig.;

Fig. 9 is a view similar to that of Fig. 7 of an alternative bandage wrap of the invention;

Fig. 10 is an unscaled, diagrammatic top view of an alternative bandage wrap of the invention;

Fig. 11 is an unscaled, diagrammatic bottom view of the bandage wrap of Fig. 10;

Fig. 12 is a diagrammatic illustration of a bandage shown covering a wound on an arm;

Fig. 13 shows the bandage of Fig. 12 with a wound covering partially removed;

Fig. 14 is a side view of the bandage of Fig. 12 with the wound covering removed from a frame; and

Fig. 15 illustrates a method of forming the bandage of Fig. 12.

DETAILED DESCRIPTION

Referring to Figs. 1 and 2, a bandage wrap 10 includes a base 12 with hooks 14 integrally molded in base 12 and extending from a first side 16 of the base. Hooks 14 cover a limited region 18 of side 16. Extending from a second side 20 of base 12 opposite side 16 is a hook-engageable material 22 and a wound dressing material 24 for covering a wound, for example, on a finger 26. Hook-engageable material 22 and wound dressing material 24 can be formed of different materials or the same material. For example, hook-engageable material 22 can be a needled nonwoven or traditional woven textile, hook-engageable loop material while wound dressing material 24 can be an absorbent material, for example, a standard cotton gauze material. Alternatively, hook-

engageable material 22 and wound dressing material 24 can be a homogeneous, woven or nonwoven, hook-engageable loop material. Additionally, the outer surface of wound dressing material 24 can be provided with a wound treating medicament that is brought into contact with the wound upon application of bandage wrap 10.

To facilitate placement of the bandage over the wound, bandage wrap 10 can include adhesive 28 for adhering the bandage wrap to the skin. The adhesive is located on side 20 of base 12, preferably opposite hooks 14 and covering a section 30 of side 10 corresponding to limited region 18. In use, the adhesive section 30 of bandage wrap 10 is placed on the skin proximate the wound and the bandage wrap is wrapped around the appendage with wound dressing material 24 covering the wound. Bandage wrap 10 is secured in place by engaging hooks 14 with hook-engageable material 22. Bandage wrap 10 can be formed of varying lengths to accommodate wrapping about different sized appendages.

Referring to Fig. 3, an adhesive free bandage wrap 40 includes a base 42 with hooks 44 integrally molded in base 42 and extending from a first side 46 of the base. Hooks 44 cover a limited region 48 of side 46. Extending from a second side 50 of base 42 opposite side 46 is a wound dressing material 54 for covering a wound. Extending lengthwise from base 42 at an end 56 of base 42 opposite region 48, is a stretchy, hook-engageable material 52.

In use (Fig. 1), bandage wrap 40 is placed on the appendage with absorbent material 54 covering the wound. To secure bandage wrap 40 in place, stretchy hook-engageable material 52 is stretched around the appendage and placed in engagement with hooks 44, placing a desired amount of compression on the wound.

Material 52 can be attached to base 42 by traditional bonding techniques or by an *in situ* lamination process, in which hook-engageable material 52 is impregnated with base-forming thermoplastic resin while the resin is simultaneously molded to form integral hooks 44. For a further description of *in situ* lamination apparatus and processes, the reader is referred to U.S. Patent 5,260,015 to Kennedy, et al., which describes such

lamination using various materials, and to U.S. Patent 5,441,687, to Murasaki et al., which discloses another form of *in situ* lamination, i.e. lamination which occurs while hooks being formed are still in their mold cavities.

Referring now to Figs. 4, a method for manufacturing a continuous bandage wrap 300 is illustrated. A band of molten thermoplastic resin 302 is extruded from extruder head 304 into a nip 306 formed between a mold roll 308 and a pressure roll 310. Mold roll 308 has a pattern of fastener element shaped mold cavities 312 that extending inwardly from its outer periphery. Simultaneously with band of thermoplastic resin 302, a nonwoven loop material 314 is fed from a supply roll 316 into nip 306. The pressure and temperature conditions in the nip cause a portion of the band of thermoplastic resin to fill cavities 312, while excess resin remains on the periphery of mold roll 308 and is pressed at least partially into the fibers of nonwoven loop material 314. The combined materials 318 exit the nip 306 and proceed along the periphery of rotating mold roll 308 to take-off rolls 320, 322, where intermediate product 324 is removed from roll 306. Intermediate product 324 has a base layer 326 (Fig. 7) of nonwoven loop material 314, the upper surface 328 of which has a permanently attached band 330 of solidified thermoplastic resin from which extends a plurality of hook shaped fastener elements 332 (Fig. 5). A strip of wound dressing material 336 (e.g., cotton gauze or the like) is attached by adhesive or other known means to the lower surface 334 of intermediate product 324 to form final bandage wrap product 300. As shown in dotted lines, a strip of adhesive 338 with or without a release liner 339 (Fig. 7) may also be attached to product 300, alternatively the strip of adhesive with or without the release liner can be applied to the underside of loop material 314 prior to its entry into nip 306. Finally, product 300 is spooled on a roll 341 for subsequent handling, e.g., to be cut transversely (along lines C Fig. 6) to desired lengths for use in the treatment of wounds or other ailments.

Referring now to Figs. 5-8, continuous wrap product 300 has base layer 326 of loop material 314, a band 330 of hook fastener elements 332 along a first edge 340 of its upper surface 328 and a strip of wound dressing 336, transversely spaced from hook band

330, on its lower surface 334. Each fastener element 332 has a loop-engaging head 333 at the top of a stem 335 that is an integral part of the surface of resin band 330. A strip of adhesive 338 (shown in dotted lines) with or without a release liner 339 (also shown in dotted lines) is also optionally present on surface 334 directly opposite hook band 330.

Bandage wrap 300 can be severed transversely, as illustrated by lines C, to form individual bandage pieces of desired length to be wrapped and releasably secured around an appendage, e.g., finger, wrist, arm, leg, ankle, chest, abdomen, etc., to be treated.

In an alternative embodiment, illustrated in Fig. 9, bandage wrap fastener product 300' has a band 340' of thermoplastic resin forming the entire thickness of its first edge portion 331' (except for the thickness associated with any adhesive layer and/or release liner disposed along edge portion 340'). Hook band 330' is formed integrally of the resin band 340' directly adjacent edge 333' while wound dressing 336' is permanently attached to side 334' of resin band 340' at a position transversely spaced from hook band 330'. Product 300' can be formed by a modification to the process described above with reference to Fig. 4 by introducing nonwoven loop material 314 and band of molten thermoplastic resin 302 in side-by-side fashion with the width of nonwoven loop material 314 limited to a dimension less than that of the entire nip 306. In this fashion, only adjacent edges of resin band 302 and loop material 314 come into contact, the resin penetrating laterally into the fibers of loop material 314 thereby affecting a permanent attachment of the two.

Referring now to Figs. 10 and 11, another alternative bandage wrap 400 has first band 430 of hook fastener elements 432 and additional, spaced apart bands 430' of hook fastener elements 432 disposed upon upper surface 428 of underlying base layer 426 of loop material 414. Similar to the embodiments of Figs. 5-9, bandage wrap 400 has a wound dressing strip 436 on lower surface 434 of base layer 426 spaced transversely from the hook band 430 associated with first edge 440.

Bandage wrap 400 can be made by modifying the process described above with reference to Fig. 4 to introduce multiple, spaced apart bands of molten thermoplastic

resin from one or more extruder heads into the nip while simultaneously feeding in an underlying layer of loop material. Each resin band is introduced into the nip at a location corresponding with bands of hook fastener mold cavities of the mold roll so that each resin band simultaneously forms hook fasteners on one band surface while the resin of the opposite surface penetrates the loop material fibers to permanently bond the resin to the loop material. The wound dressing material and optional adhesive with or without release liner are then added as described above.

Bandage wraps 300, 300' and 400 can be used in a manner similar to bandage wraps 10 and 40 as described above with reference to Figs. 1-3. In particular, bandage wrap 200 offers the unique advantage of allowing the bandage to be secured to itself in multiple locations. This allows the user to sequentially engage the exposed loop material to each band of hook fasteners as the wrap is applied. The result is better tension control during the wrapping process because the bandage wrap will only lose tension back to its last point of loop engagement with a hook band when the user inadvertently relaxes the tension being applied during the wrapping procedure.

In certain manufacturing techniques, e.g., the above described *in situ* lamination process, it is advantageous to use a hook-engageable material 52, 314, 414 that has its stretchability limited to one direction (i.e., the cross machine direction) to avoid unwanted distortion of the material due to material tension in the direction of material travel during processing (i.e., the machine direction).

In one example, such a unidirectionally stretchy, hook-engageable material 52 is a needed, nonwoven, unidirectionally stretched and stabilized loop material having substantial elasticity at least in the direction of arrow S (Fig. 3). In another example, a hook-engageable knit textile web, initially stretchy in all directions, has relatively inextensible monofilament fibers added in the machine direction to reduce stretchability of the web in the machine direction. Yet another example is a composite material formed from a nonwoven web bonded along longitudinal thermobonding weld lines to a widthwise pre-stretched elastic layer. Upon relaxation of widthwise stretching, the

nonwoven web forms a pillowed pattern of hook-engageable nonwoven fibers between adjacent weld lines. The resulting composite material is relatively inelastic in the direction of the longitudinal weld lines (machine direction) and remains relatively elastic in the cross direction.

5 For a fuller discussion of suitable stretchy and inelastic hook-engageable materials, various arrangements of such materials in combination with loop-engageable hook material and methods of manufacturing such combined products, the reader is referred to U.S. Patent Application No. 09/808,395, filed March 14, 2001, in the name of Krantz et al., entitled "Hook and Loop Fastening," and published _____ as U.S.
10 Published Patent Application No. _____.

Referring to Figs. 12-14, a two-part bandage 100 includes a frame 102 and a wound covering 104. Frame 102 includes a base 106 with four sides 108a-d defining a window 110, and hooks 112 integrally molded in base 106 and extending from a first side 114 of base 112. On a second side 116 of base 112, opposite side 114, is an adhesive 118
15 covered by a release layer 120. Wound covering 104 includes a hook-engageable layer 122 and a wound dressing layer 124 attached to one side 123 of wound covering 104, for example, by ultrasonic tacking. Layer 124 is smaller than layer 122 such that a periphery 126 of layer 122 is free to engage hooks 112 of frame 102. Alternatively, the loop material 122 and the wound dressing 124 are attached to a separate backing layer 121 of
20 e.g., a film or other substrate. In this alternative, the loop material can be provided only about the periphery of separate backing layer 121 with the wound dressing being attached directly to a central portion of the separate backing layer.

In use, the release layer 120 is removed from frame 102, and the frame and attached wound covering are placed over the wound, adhesive 118 adhering frame 102 to
25 skin 101, with the four sides of the frame surrounding the wound 103 but not contacting the wound. To change the wound covering, wound covering 104 is removed by disengaging the hook-engageable material from the hooks, and a new wound covering is

attached to frame 102. The wound can be viewed simply by lifting back a portion of the wound covering.

As shown in dashed line in Fig. 13, for an adhesive free bandage, frame 102 includes a first strap 130 with hooks and a second strap 132 formed of hook-engageable material. In use, the bandage is placed over the wound with frame 102 surrounding the wound, and straps 130, 132 are wrapped around the body part and connected to each other by engaging the hook-engageable material with the hooks to secure the bandage in place.

Fig. 15 illustrates a method of making two-part bandage 100. The method includes laminating hook bearing base 106 with adhesive layer 118 and release layer 120 at a lamination station 200, and die cutting the resulting laminate 102a to form windows 110 in laminate 102a at a die cut station 202. In parallel, wound dressing material 124 is die cut at a die cut station 204 to form discrete wound dressing elements 124a. Discrete elements 124a are vacuum transferred to an ultrasonic tacking station 206 where discrete elements 124a are attached to hook engageable material 122 to form wound covering 104a. Laminate 102a and wound covering 104a are then juxtaposed with discrete elements 124a facing base 106 and together passed through a die cut station 208 where the two parts are connected by engagement of the hook-engageable material with hooks 112 on base 106 and cut to form bandages 100.

The references discussed above, including U.S. Patent No. 5,260,015 to Kennedy, et al., U.S. Patent No. 5,441,687, to Murasaki et al., and U.S. Published Patent Application No. _____, to Krantz et al. are hereby fully incorporated by reference.

A number of embodiments of the invention have been described. Nevertheless, it will be understood that various modifications may be made without departing from the spirit and scope of the invention. Accordingly, other embodiments are within the scope of the following claims.

WHAT IS CLAIMED IS:

1 1. A bandage wrap (10, 40, 300, 300', 400) in the form of a strip composite
2 material defining a longitudinal direction and comprising:

3 a longitudinally continuous band (18, 48, 330, 330', 430) of loop-engageable
4 fastener elements (14, 42, 332, 332') extending along a first longitudinal edge (340, 333',
5 440) of the bandage wrap;

6 a longitudinally continuous strip of loop material (22, 52, 314, 414) extending
7 along a second longitudinal edge of the bandage wrap and having an exposed surface
8 arranged to be engaged by the fastening elements when the bandage wrap is wrapped
9 about an object (26) extending in said longitudinal direction; and

10 a longitudinally continuous band of wound dressing (24, 54, 336, 436) spaced
11 from both longitudinal edges of the bandage wrap and extending from a side (20, 50, 328,
12 428) of the bandage wrap opposite the fastener elements.

1 2. The bandage wrap of claim 1, wherein the fastener elements have stems (335),
2 the stems being integrally molded with a strip form resin base (330) forming the first
3 longitudinal edge (340) of the bandage wrap.

1 3. The bandage wrap of claim 2, wherein the wound dressing (24, 54, 336') is
2 permanently secured to the side (20, 50, 334') of the strip-form resin base (12, 42, 340')
3 opposite the band of fastener elements (18, 48, 330').

1 4. The bandage wrap of claim 3, wherein the wound dressing (24, 54, 336, 336',
2 436) is transversely spaced from the band of fastener elements (18, 48, 330, 330', 430).

1 5. The bandage wrap of claim 1 further comprising a strip of adhesive (30, 338,
2 438) extending along the first longitudinal edge (340, 333', 440) on a side (20, 50, 328,
3 428) of the bandage wrap opposite the band of fastener elements.

1 6. The bandage wrap of claim 1 in the form of a roll (341) of bandage wrap
2 material adapted to be severed transversely into separate bandage wraps.

1 7. The bandage wrap of claim 1, wherein said loop material is a non-woven web
2 of fibers stretchable in the transverse direction (S) and dimensionally stable in the
3 longitudinal direction.

1 8. The bandage wrap of claim 1 further comprising a second band of loop
2 engageable fastener elements (430') spaced apart from said first longitudinal edge.

1 9. A reclosable wound covering assembly comprising:
2 a frame member (102) defining a central aperture (110), the frame having a first
3 and a second broad surface (114, 116), loop-engageable fastener elements (112)
4 extending from the first broad surface about a perimeter of the aperture, and an adhesive
5 (118) disposed on the second broad surface for adhering the frame member to skin (101);
6 and

7 a wound covering (104) including a loop material (122) engageable by the
8 fastener elements and a wound dressing (124) permanently attached to the loop material
9 to extend from one side (123) of the wound covering, the loop material being sized and
10 shaped to cover the aperture (110) and to overlap the perimeter for releasably engaging
11 the loop material with the frame member, the wound dressing being arranged to be
12 received in the aperture when the loop material is engaged by the fastener elements about
13 the perimeter of the aperture.

1 10. The reclosable wound covering assembly of claim 9, wherein the loop-
2 engageable fastener elements (112) are integrally molded with the second broad surface
3 (114) of the frame from a common thermoplastic resin.

1 11. The reclosable wound covering assembly of claim 10, wherein the wound
2 covering (104) further comprises a backing layer (121) to which the loop material (122)
3 and the wound dressing (124) are permanently attached.

1 12. The reclosable wound covering assembly of claim 10, wherein the loop
2 material (122) forms a backing to which the wound dressing (124) is permanently
3 attached.

1 13. The reclosable wound covering assembly of claim 11 further comprising a
2 release liner (120) covering the adhesive (118) for removal prior to applying the frame
3 member (102) about a wound (103).

1 14. The reclosable wound covering assembly of claim 10, wherein the wound
2 dressing (124) includes a pre-applied medicament for contacting and treating a wound
3 (103).

1 15. An adhesive free bandage wrap, comprising:
2 a four-sided hook frame (102) including hook and loop engageable fastening
3 straps (130, 132), and
4 a wound covering (104) including hook-engageable material (122) for engaging
5 with the hook frame and wound dressing material (124) for covering a wound (103).

1 16. A method of making a bandage (100), comprising:

2 die cutting a first material (106) including hooks (112) to form windows (110) in
3 the first material,
4 die cutting wound dressing material (124) to form discrete wound dressing
5 elements,
6 tacking the discrete wound dressing elements to a hook-engageable material (122)
7 to form a wound covering (104a), and
8 die cutting and releasably engaging the first material (106) and the wound
9 covering (104a) to form the bandage.

1 17. The method of claim 16 further comprising laminating an adhesive (118) and
2 a release layer (120) to the first material (106).

1 18. A bandage made by the method of claim 16.

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WOUND COVERING

A bandage wrap (10, 40, 300, 300', 400) in the form of a strip composite material defining a longitudinal direction includes a longitudinally continuous band (18, 48, 330, 330', 430) of loop-engageable fastener elements (14, 42, 332, 332') extending along a first longitudinal edge (340, 333', 440) of the bandage wrap, a longitudinally continuous strip of loop material (22, 52, 314, 414) extending along a second longitudinal edge of the bandage wrap and having an exposed surface arranged to be engaged by the fastening elements when the bandage wrap is wrapped about an object (26) extending in the longitudinal direction, and a longitudinally continuous band of wound dressing (24, 54, 336, 436) spaced from both longitudinal edges of the bandage wrap and extending from a side (20, 50, 328, 428) of the bandage wrap opposite the fastener elements. A reclosable wound covering assembly includes a frame member (102) defining a central aperture (110), the frame having a first and a second broad surface (114, 116), loop-engageable fastener elements (112) extending from the first broad surface about a perimeter of the aperture, and an adhesive (118) disposed on the second broad surface for adhering the frame member to skin (101) and a wound covering (104) including a loop material (122) engageable by the fastener elements and a wound dressing (124) permanently attached to the loop material to extend from one side (123) of the wound covering, the loop material being sized and shaped to cover the aperture (110) and to overlap the perimeter for releasably engaging the loop material with the frame member, the wound dressing being arranged to be received in the aperture when the loop material is engaged by the fastener elements about the perimeter of the aperture. Such an assembly can be adhesive free by including loop engageable fastening straps (120, 132). A method of making a bandage (100), includes die cutting a first material (106) including hooks (112) to form windows (110) in the first material, die cutting wound dressing material (124) to form discrete wound dressing elements, tacking the discrete wound dressing elements to a hook-engageable material (122) to form a wound covering (104a), and die cutting and

releasably engaging the first material (106) and the wound covering (104a) to form the bandage.

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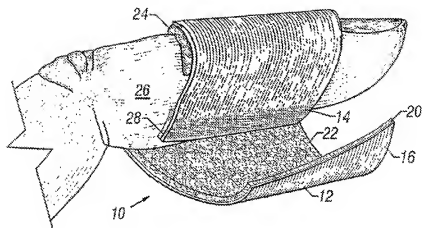


FIG. 1

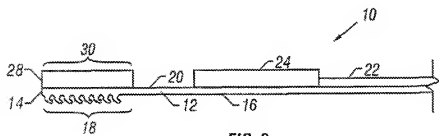


FIG. 2

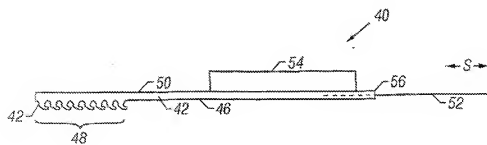


FIG. 3

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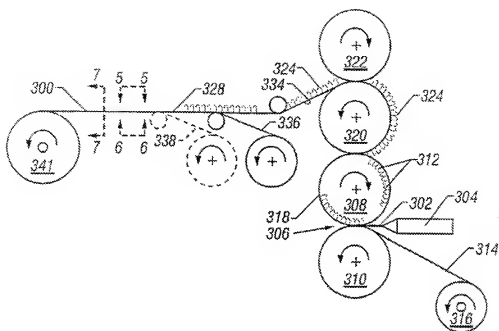


FIG. 4

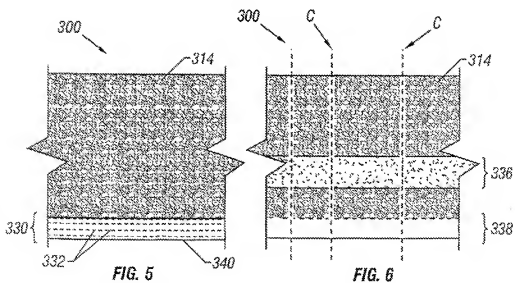


FIG. 5

FIG. 6

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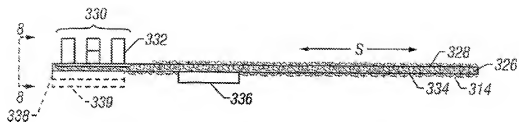


FIG. 7

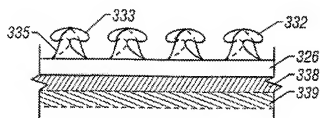


FIG. 8

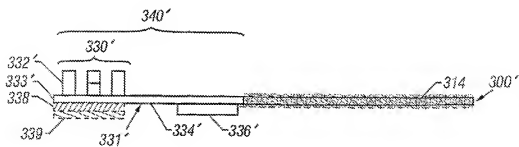


FIG. 9

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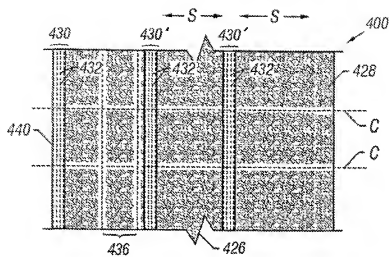


FIG. 10

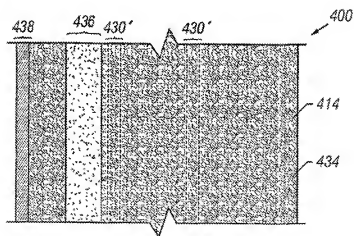


FIG. 11

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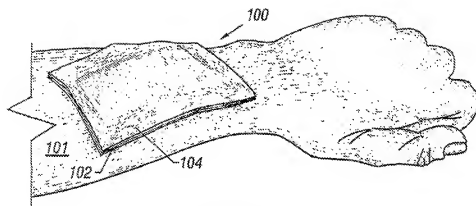


FIG. 12

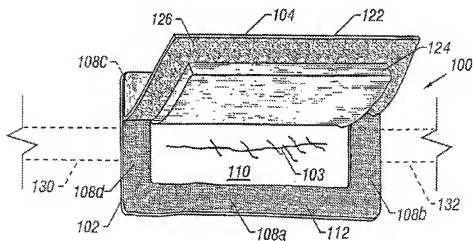


FIG. 13

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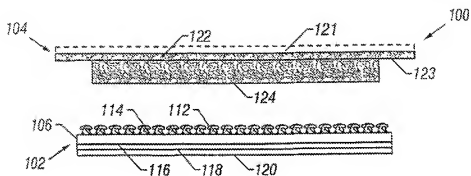


FIG. 14

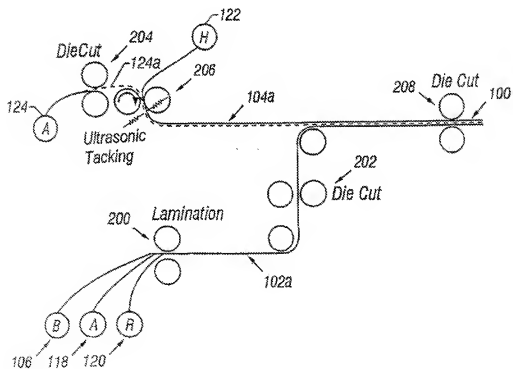


FIG. 15

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(71) Applicant (for all designated States except US): VELCRO INDUSTRIES B.V. [NL/NL]; 22-24 Castorweg, Curacao (AN).

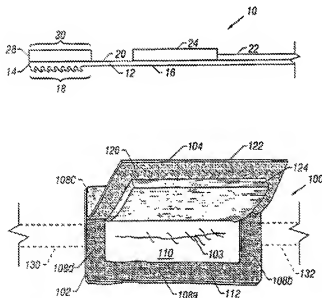
(72) Inventors; and
(75) Inventors/Applicants (for US only): FERDINAND, Justin, W. [US/US]; 116 Talcut Road, Litchfield, NH 03052 (US); JOY, Jeffrey, S. [US/US]; 29 Heathside Circle, Bedford, NH 03110 (US); PFAFF, Daryl, D. [US/US]; 23 Roy Road, Hooksett, NH 03106 (US); ROBERTS, Jennifer [US/US]; 20 Wedgwood Drive, Lawrence, MA 01843 (US).

(74) Agents: WILLIAMS, John, N. et al.; Fish & Richardson P.C., 225 Franklin Street, Boston, MA 02110-2804 (US).

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH.

[Continued on next page]

(54) Title: WOUND COVERING



(57) Abstract: A bandage wrap (10, 40, 300, 300', 400) in the form of a strip composite material defining a longitudinal direction includes a longitudinally continuous band (18, 48, 330, 330', 430) of loop-engagable fastener elements (14, 42, 332, 332') a longitudinally continuous strip of loop material (22, 52, 314, 414) and a longitudinally continuous band of wound dressing (24, 54, 336, 436) spaced from both longitudinal edges of the bandage wrap and extending from a side (20, 50, 328, 428) of the bandage wrap opposite the fastener elements. A releasable wound covering assembly includes a frame member (102) defining a central aperture (110), the frame having a first and a second broad surface (114, 116), loop-engagable fastener elements (112) extending from the first broad surface about

a perimeter of the aperture, and an adhesive (118) disposed on the second broad surface for adhering the frame member to skin (101) and a wound covering (104) including a loop material (122) engagable by the fastener elements and a wound dressing (124) permanently attached to the loop material, the loop material being sized and shaped to cover the aperture (110) and to overlap the perimeter for releasably engaging the loop material with the frame member, the wound dressing being arranged to be received in the aperture when the loop material is engaged by the fastener elements about the perimeter of the aperture. Such an assembly can be adhesive free by including loop engagable fastening straps (120, 132). Methods of making a bandage wrap and a releasable wound covering assembly are also disclosed.

WO 02/038096 A3



GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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INTERNATIONAL SEARCH REPORT

International Application No.

PCT/US 01/28822

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A61F13/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61F

Documentation searched other than minimum documentation to the extent that such documents are excluded in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI-Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 527 566 A (ABARE HELENA E) 9 July 1985 (1985-07-09) column 2, line 13-34 column 3, line 32-52; figures	1, 8
A	-----	7
X	US 5 800 372 A (BELL EUGENE ET AL) 1 September 1998 (1998-09-01) column 5, line 37-52; figures 1, 2	1
X	US 5 662 599 A (REICH MARSHALL P ET AL) 2 September 1997 (1997-09-02) abstract; figures	1
A	-----	9, 15
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☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

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Z document member of the same patent family

Date of the actual completion of the international search

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Seabra, L

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/US -01/28822

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication where appropriate, of the relevant passages	Relevant to claim No.
A	WO 98 02120 A (RECORDE LIMITED ;BERNHARD MARK JULIAN (GB)) 22 January 1998 (1998-01-22) page 5, line 26 -page 6, line 7 page 15, line 10-15; figures 1,3,4 -----	1,7,8
A	CH 349 371 A (INT PATENTS DEV CORP ESTABLISH) 15 October 1960 (1960-10-15) page 1, line 24-35; figures -----	5
X	GB 2 150 028 A (NOLAN MICHAEL WILLIAM) 26 June 1985 (1985-06-26) page 2, line 41 -page 3, line 30; figures -----	9-14, 16-18
X	US -4 910 020 A (SAMOUR CARLOS) 20 March 1990 (1990-03-20) the whole document -----	9-15
X	US 5 876 365 A (HART ROBERT L) 2 March 1999 (1999-03-02) the whole document -----	9-15

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 01/28822**Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)**

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-8

Bandage wrap in the form of a strip composite defining a longitudinal direction comprising a band of loop-engageable fastener elements extending along a first longitudinal edge, a band of loop material extending along a second longitudinal edge arranged to be engaged by the fastener elements when the bandage is wrapped about an object and a wound dressing spaced from both longitudinal edges and extending from a side of the bandage opposite the fastener elements.

2. Claims: 9-18

A reclosable wound covering assembly comprising a frame member defining a central aperture, the frame comprising loop-engageable fastener elements on a first surface and adhesive on the opposite surface for adhering the frame to the skin; a wound covering including a loop material engageable by the fastener elements and a wound dressing permanently attached to the loop material; the wound dressing being arranged to be received in the aperture when the loop material is engaged by the fastener elements about a perimeter of the aperture.
In the group of independent claims for this same invention a method of making the reclosable wound covering assembly as well as an adhesive free reclosable wound covering assembly in the form of a bandage wrap are also claimed.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No.

PCT/US 01/28822

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 4527566	A	09-07-1985	NONE	
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